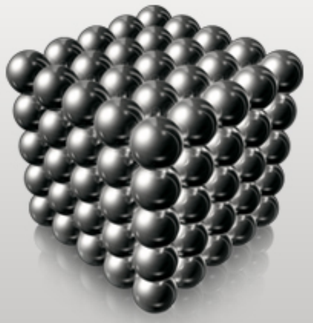
Enterprise IT State of the Union

Session 600

These are confidential sessions—please refrain from filming or taking pictures.



Enterprise IT

Enterprise IT State of the Union

Dr. Bud Tribble
VP Software Technologies

http://developer.apple.com/wwdc2005/

Year in Review

https://developer.apple.com/wwdcsecure/

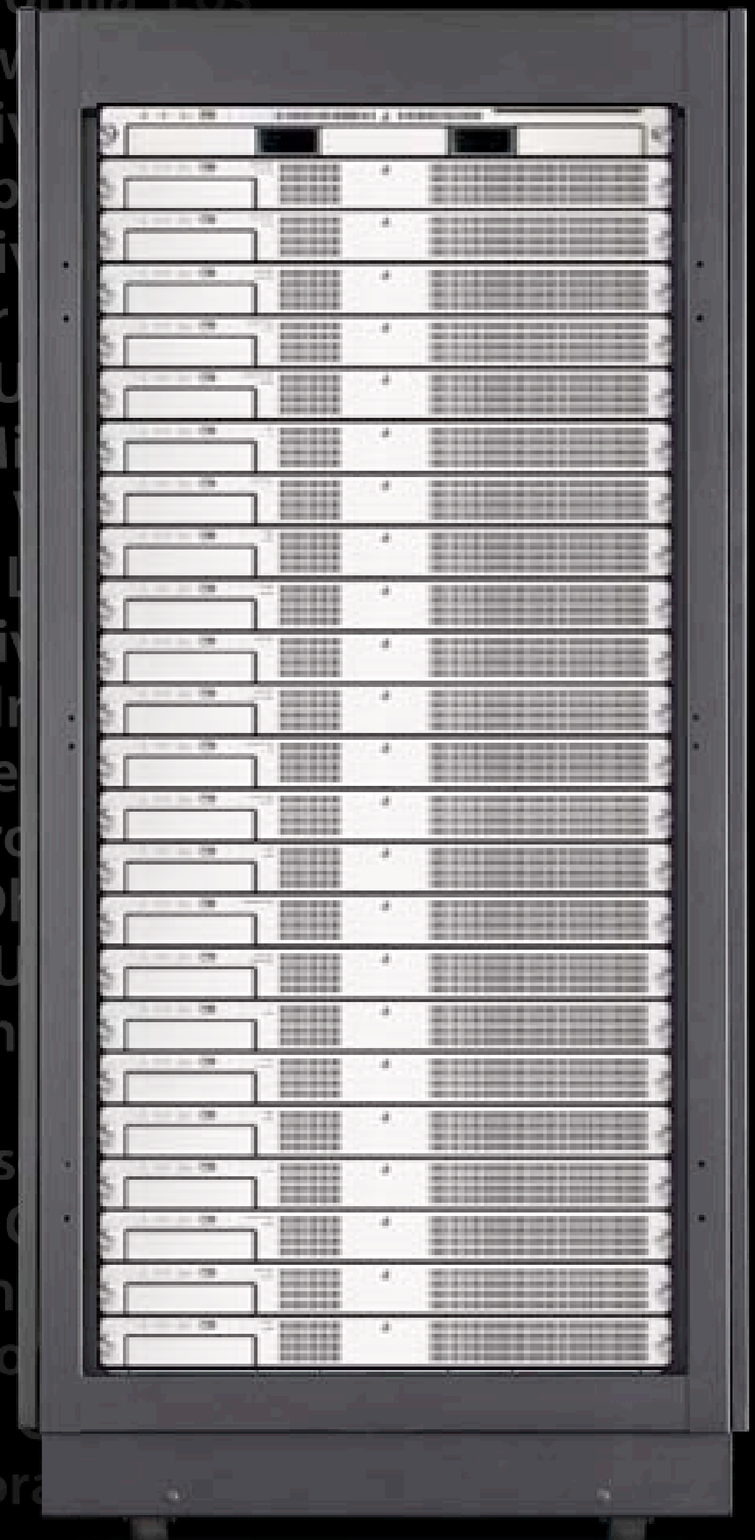
“The combination of the Cluster Node configuration and Xgrid clustering software represents a revolution in how IT looks at computers and builds systems.”

PJ Connolly, InfoWorld

“If you want a complete productivity platform, you can nickel and dime your way there with Windows, hammer and saw your way there with Linux … or hit the ground running with OS X.”

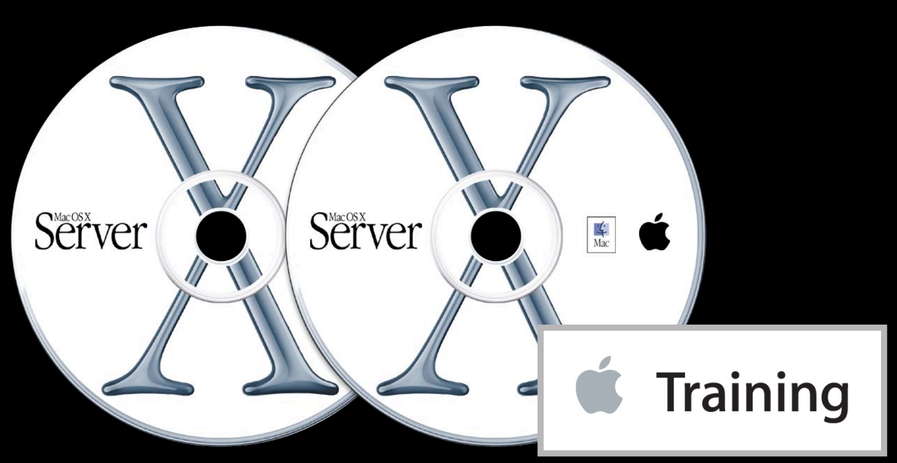
Tom Yager
InfoWorld

Virginia Tech University • University of Illinois • University of California Los Angeles • Yale University • Princeton University • University of New • Danforth Plant Institute • Sandia National Labs • Mayo Clinic • Univ California Davis • Texas A&M University • Naval Medical Research Lab • Pacific Title • University of Michigan • Georgetown University • Univ Virginia • University of California San Diego • Dana Farber Cancer • Purdue University • Beth Israel Medical Center • McGill University • U of North Carolina • Temasek Life Sciences Laboratory • Australia Mi Defence • Jet Propulsion Laboratory • Outpost Digital • University of University of Colorado • University of Albany • Mitre Corporation • Livermore National Labs • Beth Israel Deaconess Medical Center • Univ Pittsburgh • Academia Sinica • Monterey Bay Aquarium Research In Purdue University • United States Department of Agriculture • Case Reserve University • Harvard University • National Institute of Enviro Health Sciences • Idaho State University • Stanford University • Ol University • Children's Research Institute • University of Michigan • U of Idaho • Queens College • Hunter College • Binghamton Un University of Oregon • Rockefeller University • Hamilton College University • University of North Carolina Charlotte • University of Wis Madison • Furman University • University of Kentucky • Colby C University of Toronto • University of Iowa • Washington State Un University of Florida • University of Michigan Dearborn • University o Washington State University • University of Southern California • University • University of Maine • University of Chicago • COLSA Corpora

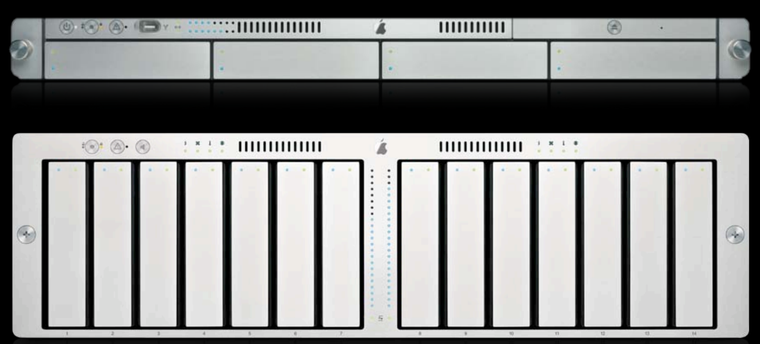


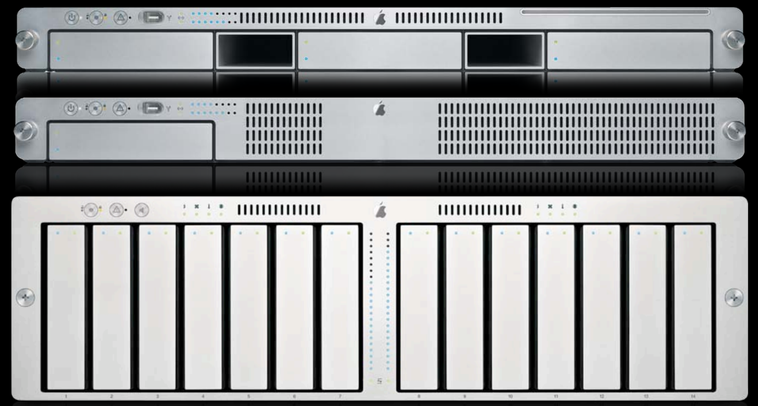
Innovation

Apple Server and Storage Line

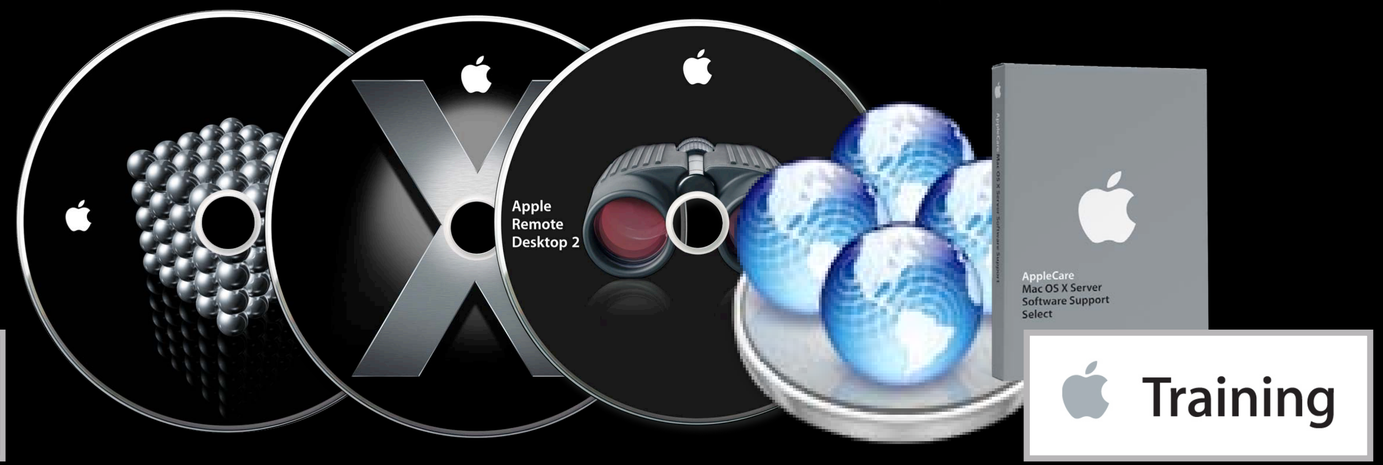


2001 **2002** **2003**

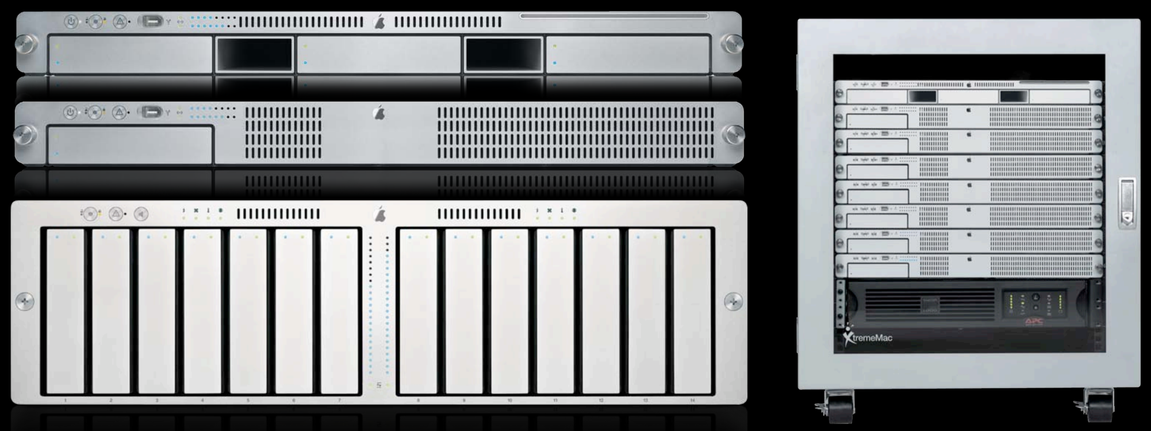




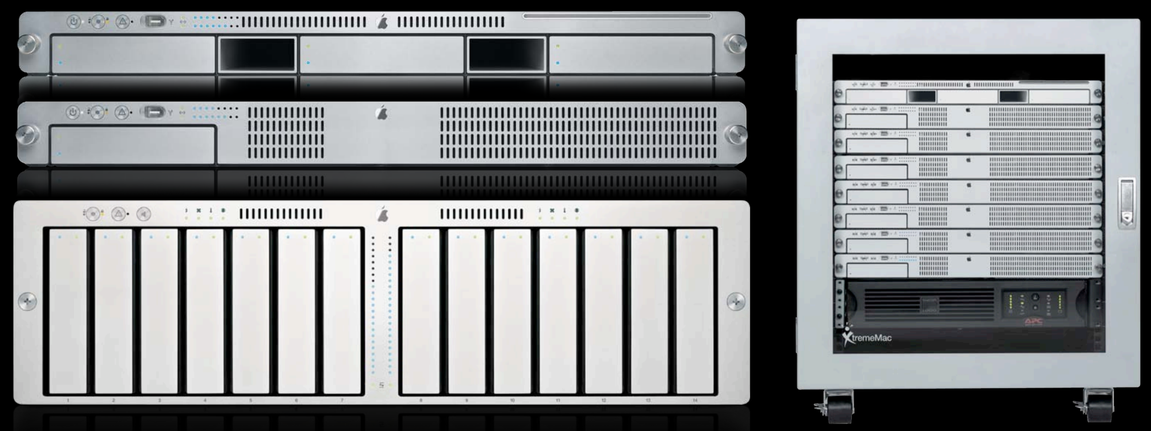
Apple Server and Storage Line



2004



2005



Xserve G5

January 2005

- Dual 2.3GHz PowerPC G5 processors
  - Over 10 gigaflops of FPU performance
  - Over 35 gigaflops of Velocity Engine performance
- Dual 1.15GHz system bus
  - 9.2GB/s bandwidth per processor
- Industry-leading 1.2TB of internal storage
- 16GB maximum memory via 2GB DIMMs

Xserve RAID

High-performance storage

- High performance
  - 380MB/s seq. reads, 320MB/s seq. writes, and 40,000 cached I/Os
- High capacity—5.6TB in 3U
- High availability architecture
- Industry-standard Fibre Channel
  - Scable in capacity and host connections
  - Interoperable
- Easy setup and remote management
- Great price/performance—$2.32/GB

Mac OS X Server v10.4

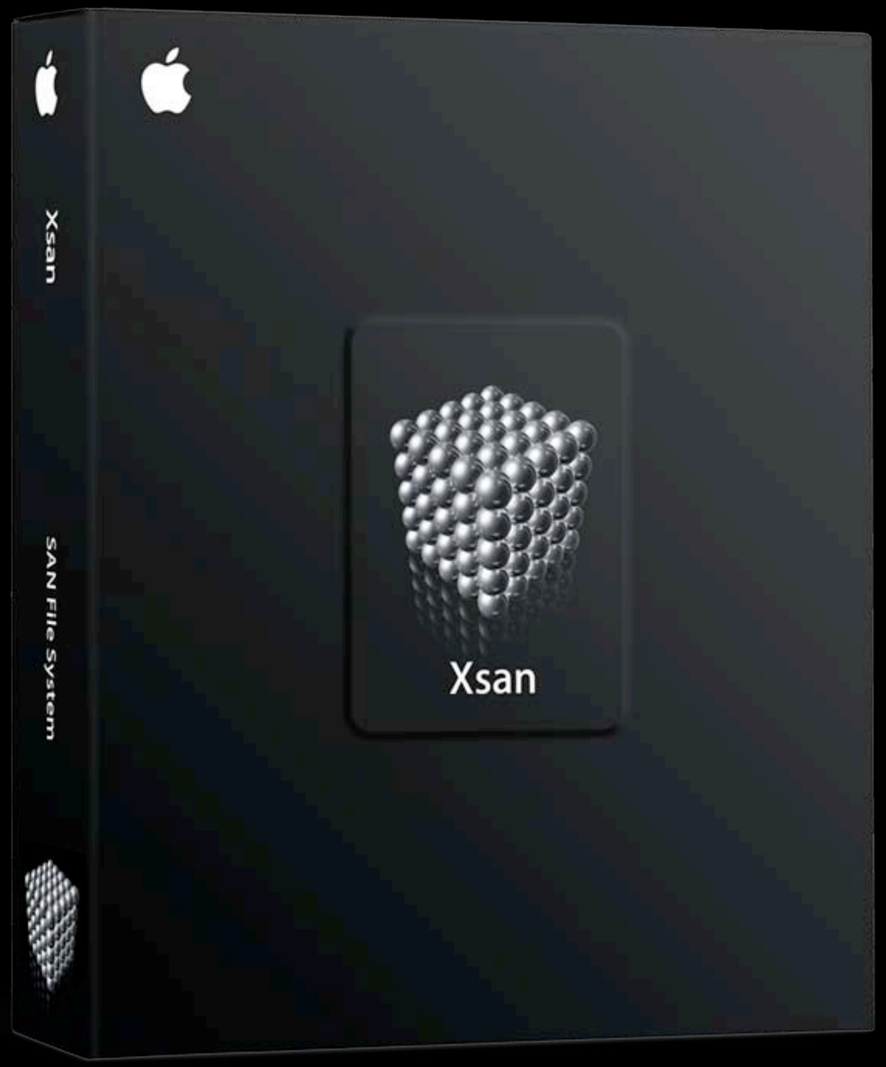
What's New in Tiger Server

- 64-bit applications
- Access control lists
- iChat Server
- Software Update Server
- Weblog Server
- Junk mail and virus filtering
- Ethernet link aggregation
- Xgrid

Apple Remote Desktop 2

Desktop management made easy

- Software distribution
- Asset management
- Remote administration
- Remote assistance



Xsan

The SAN file system for Mac OS X

- High-performance storage networking
- High-availability architecture
- Flexible volume management
- Easy remote administration
- Compatibility and interoperability

Partner Adoption

Microsoft
ORACLE
netopia
IBM
Myricom
STALKER SOFTWARE INC.
ManageSoft The Software Management Company
TIBCO The Power of Now
LANDesk
Sun microsystems
Small Tree Communications
BakBone
Novell
SilverStorm TECHNOLOGIES
MARRATECH
RIM
KERIO
Sassafras Software
Cisco Systems
Atempo
Check Point Software Technologies Ltd.
eclipse
EMC² dantz
4D
efficient intelligent Effigent, Inc.

Customers

https://developer.apple.com/wwdcsecure/

Oracle

- Need: Low cost storage solution for internal and customer use
- Deployment: 3 Xserve RAID's, expanding to 6 Xserve RAID's
- Results: Xserve RAID Storage supporting over 1000 internal employees using Oracle Collaboration Suite, expanding to supporting 5000

CNN

- Need: Edit real time news and deliver to multiple CNN networks.
- Deployment in Progress: 20 Xserve's, 6 Xserve RAID's, 32 Xsan file systems, 30 Final Cut Pro
- Result: Supporting mission critical 24/7 news operations

Army.mil

- Need: Streaming content and web site security for 60 Army websites
- Deployment: 7 Xserve's and Xserve RAID
- Result: Secure website with no succesful attacks

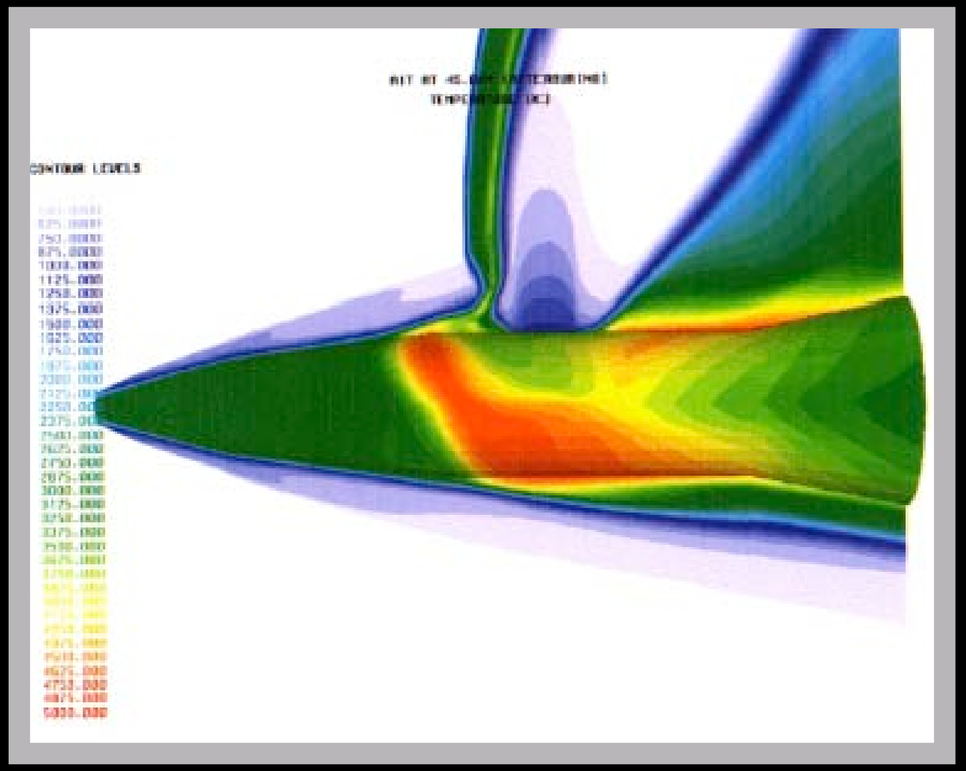
UCLA Physics and Astronomy Department

- Need: Advance research and education in diverse areas of plasma science
- Deployment: 256 Dual Processor Xserves
- Result: 4 Trillion double precision floating point operations/second

Video

https://developer.apple.com/wwdcsecure/

COLSA—Update

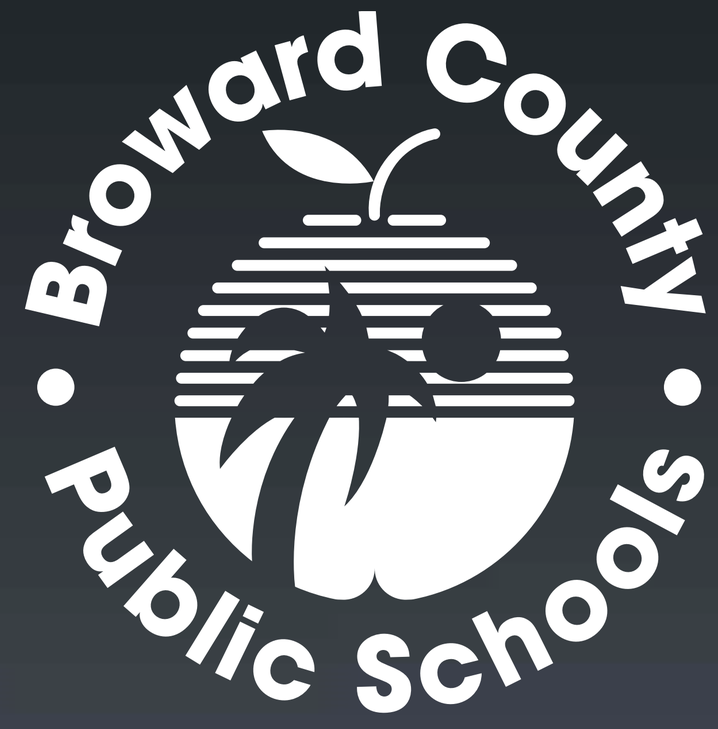


- Need: Large scale, high performance, computational cluster for hypersonic research
- Deployment: 1,566 Dual Processor 2.0 G5 Xserves, 6 Xserve RAID, 6 Xsan file systems
- Result:Largest Apple Xserve HPC installation delivering FORTRAN based custom Hypersonic Flight Simulation modeling analysis for multi-year government contract

The Year in Review

- A growing Enterprise product line
- Aggressive partner adoption
- Great customer feedback

Broward County



Vijay Sonty
Chief Information Officer

http://developer.apple.com/wwdc2005/

Mission and Goals

“Effectively utilize technology in the teaching and learning process for student achievement.”

Broward County Public Schools

- 6th largest K–12 school system in U.S.
- More than 274,000 students
- $4.14B budget (2004–2005)
- 39,450 employees
- Equal to Fortune 500 company

Education is an Enterprise

- Over 150,000 networked devices
- 600 servers
- 251 schools
- Mainframe/Midrange host systems
- SAP for HR/Payroll
- Legacy Student Information System
- 80% Macintosh

IBM® SAP Cisco Systems® Microsoft

State Reporting
State 20 years

Gradebook
Pinnacle 1 year

Auto Dialer
1 year

Parent Data
Virtual Counselor 2 years

Student Information System
TERMS 20 years

Instructional Learning Systems

Report Cards

Manual

- Document Management
- Project Management
- Preventive Maintenance
- EDI
- Recruiting

Local Databases Excel-Filemaker Pro

- Treasury
- School Budget
- Student Data-Pix Badges

Transporting Routes-Schedules
Edulog 12 years

Facilities Documentation
Prolog 13 years

School Facilities
Magellan 12 years

Vendor

School/ Departments

Treasury Excel

Work Orders
Compass 30 years

Purchasing
MSA 14 years

Inventory Control-Warehouse
Compass 20 years

State Reporting
State 14 years

Budgets/Accounts Payable
MSA 14 years

School Internal Accounts
Great Plains 5 years
Manatee 10 years

Fixed Assets
BCPS 30 years

Help Desk
Vantive 15 years

Capital Planning Excel

Payroll
SAP 3 years

Human Resources
SAP 3 years

State Reporting
BCPS 3 years

Food Services
PCS 10 years

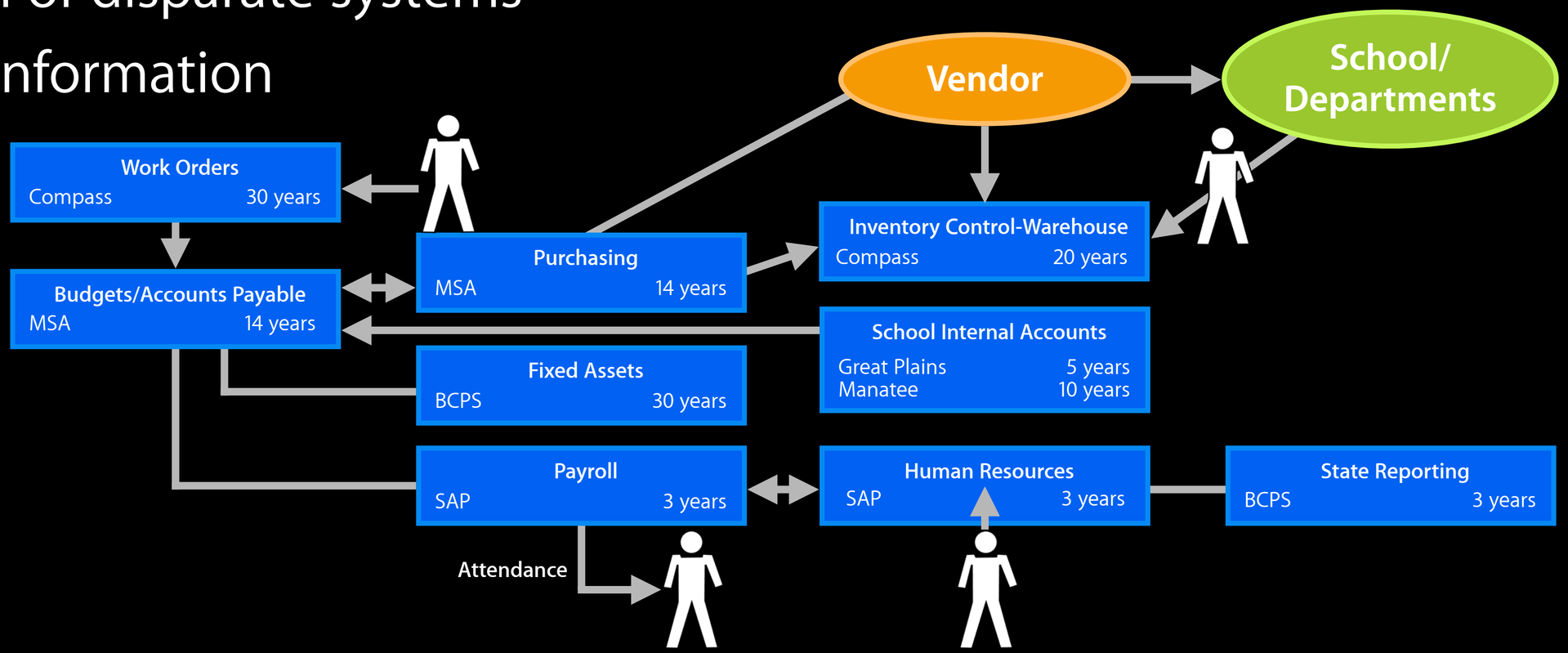
School Meal Program
PCS 10 years

Vendors

Attendance

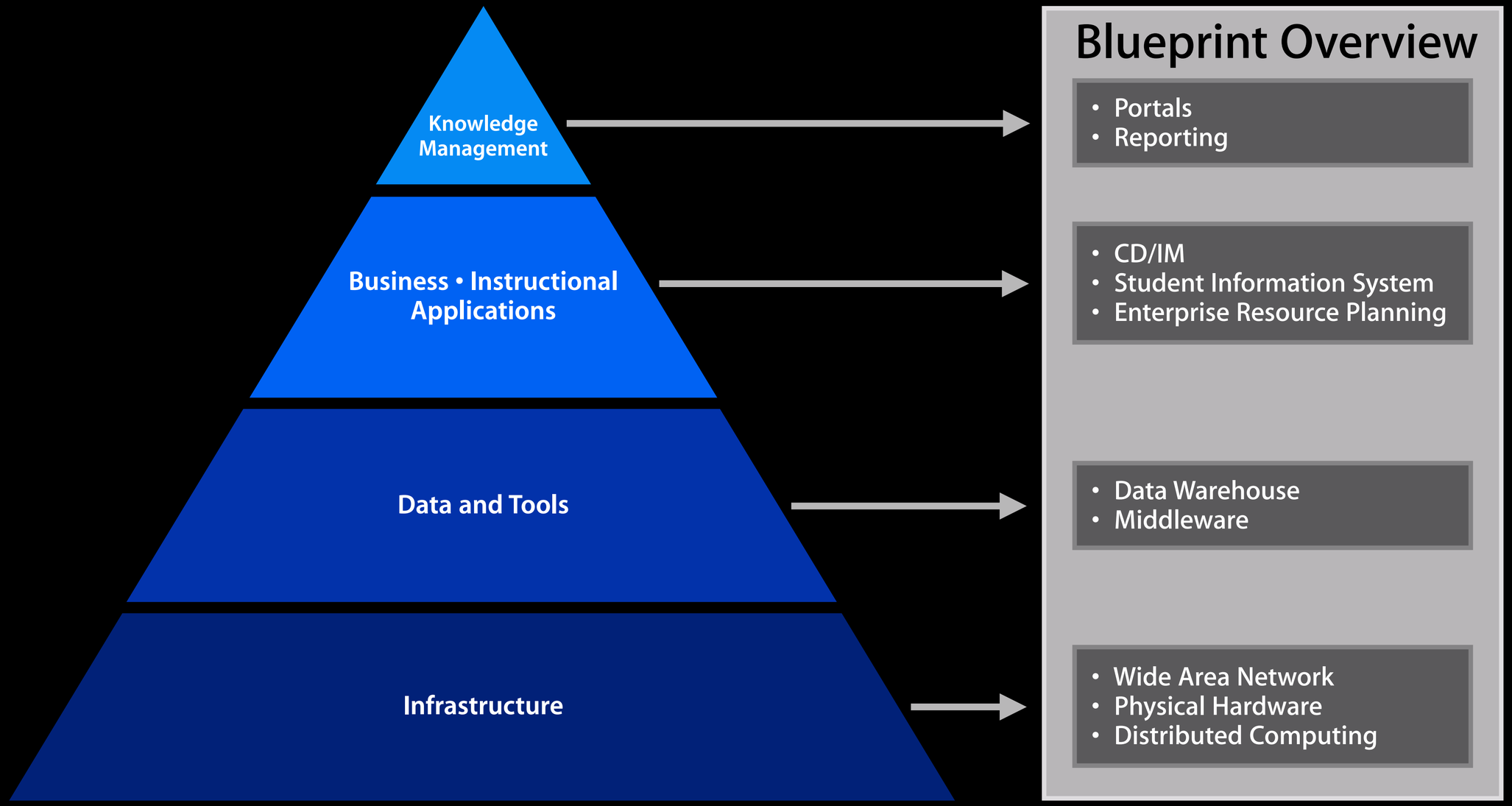
Unique Challenges

- NCLB requirements for assessment and reporting
- Children's Internet Protection Act (CIPA) and other legislation
- Myriad of outdated legacy systems
- Integration of disparate systems
- Islands of information



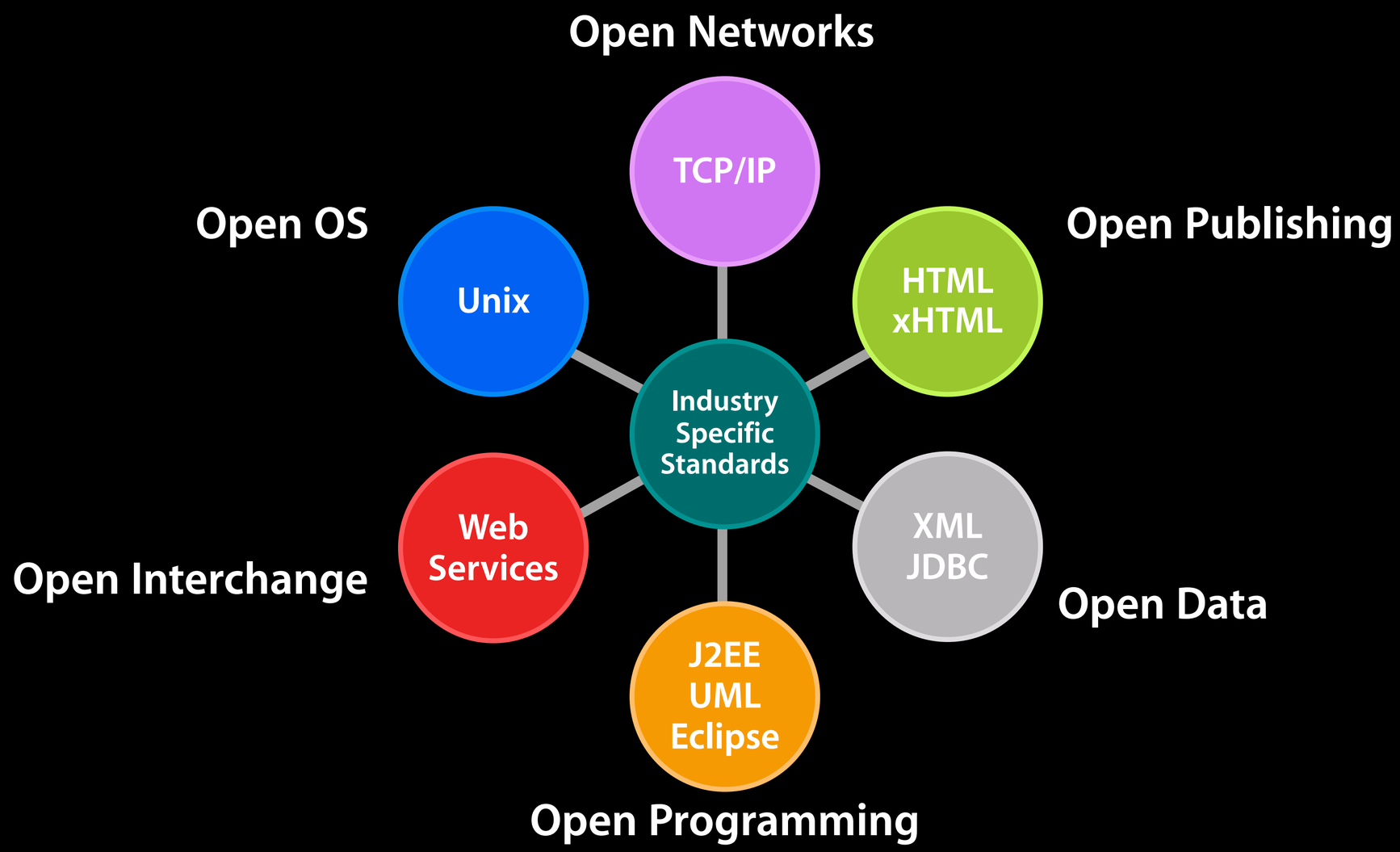
Blueprint Overview

"Building Block" technology architecture



Knexus Portal

Based on open standards



Project Knexus

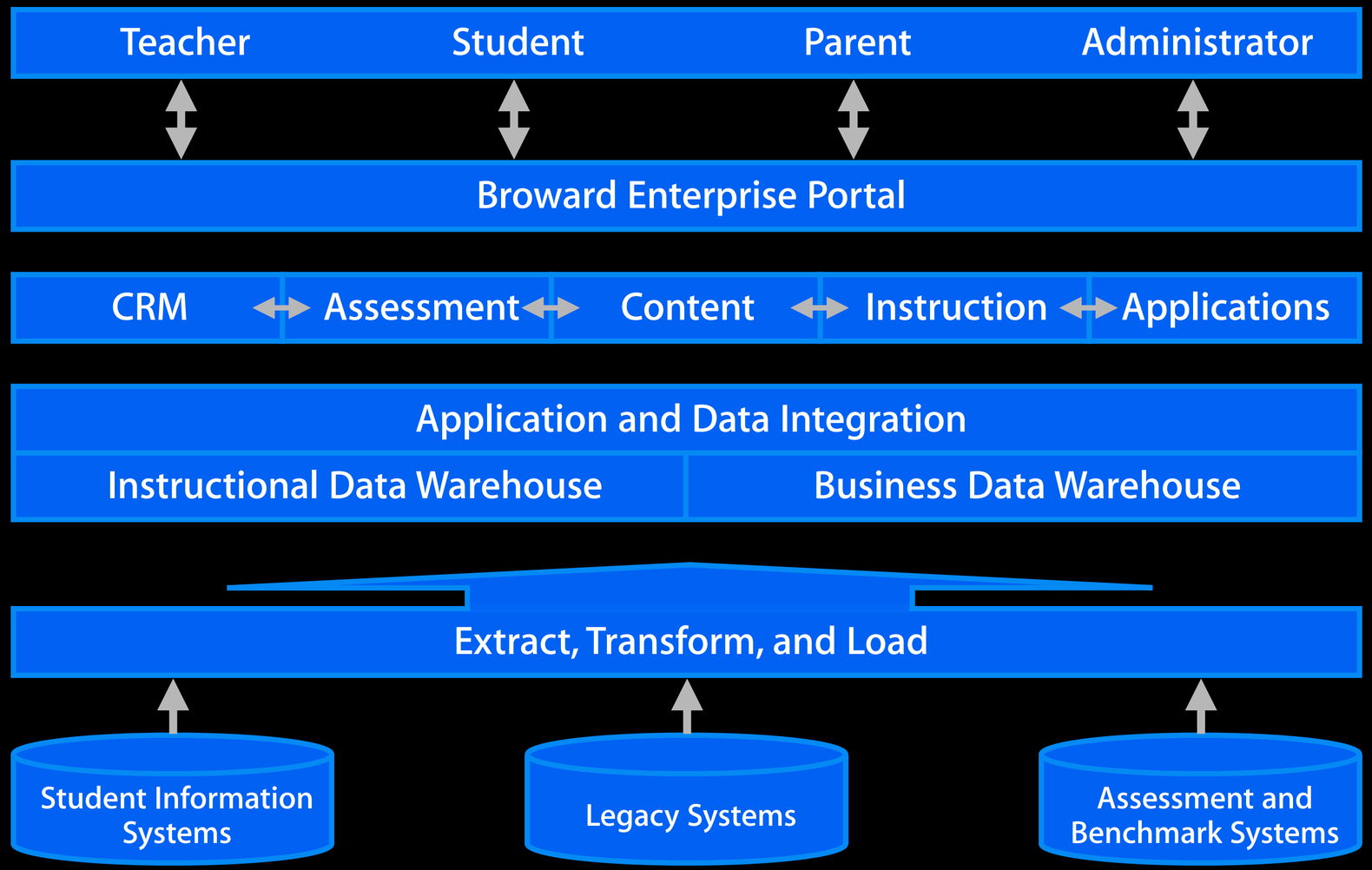
Knowledge: knowl•edge ('nä-lij)*noun*. An organize collection of facutal or procedural information necessary to function in a role

Nexus: nex•us ('nek-süs)*noun*. The means of connection between things linked in series

Goal: To provide unified access to district information

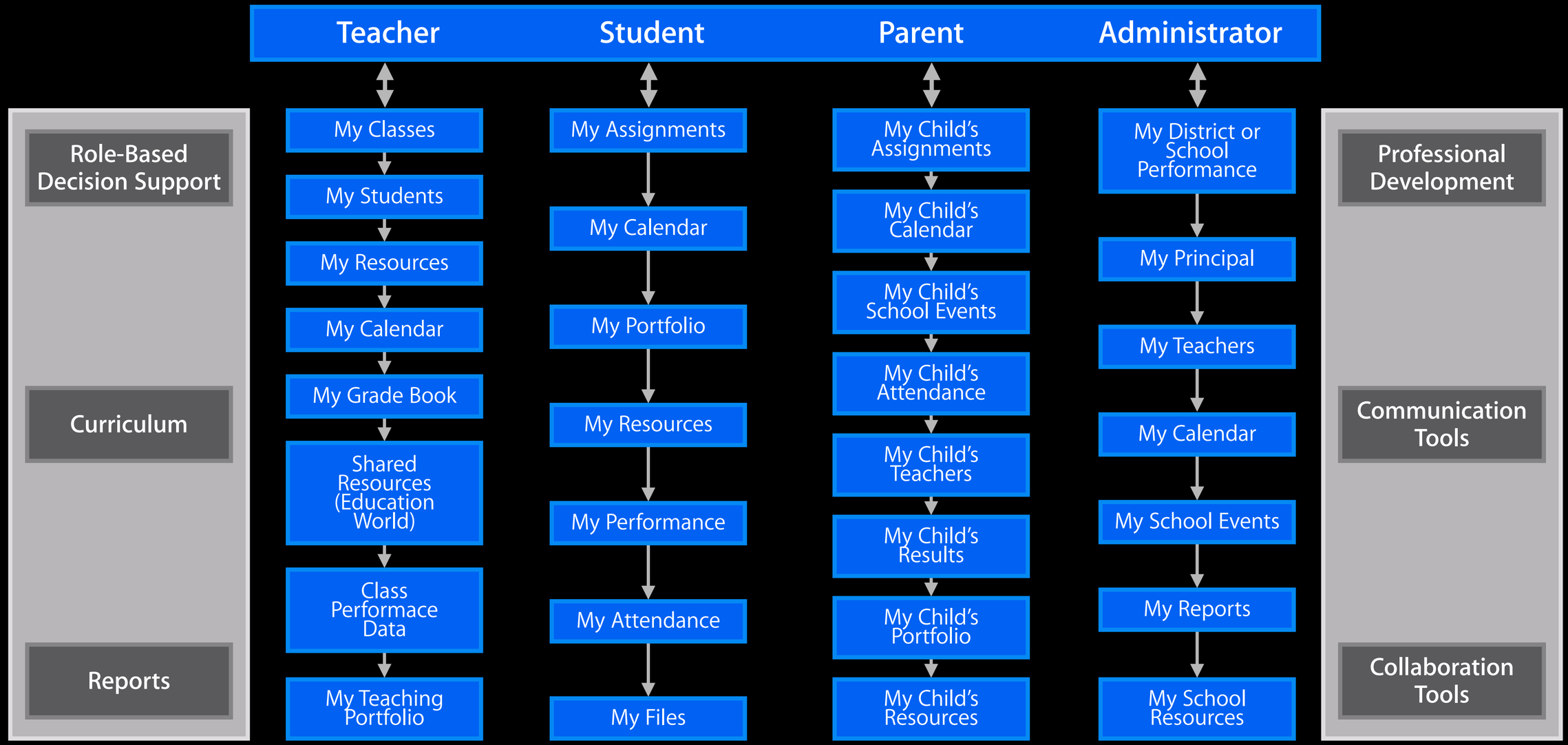
Anatomy of Project Knexus

Integrating People, Process, Data & Applications



Roles-based Personalization

Portals, business intelligence, infrastructure and widgets



Examples of Broward Widgets

- Phone Directory
- My School Calendar
- Quick Attendance
- Library Minder
- Handy Helpers

Call to Action

- Decision support heads-up displays
- Systems management monitors
- Key performance indicators
- Quick access to hosted applications
- Presence awareness
- Hardware integration

Aozora Bank
あおぞら銀行

Joe Duhamel
Joint General Manager

http://developer.apple.com/wwdc2005/

Who is Aozora Bank?

- Aozora is a successful and profitable bank
- Huge legacy of aging and obsolete IT systems
- People and systems stuck in 1990
- Environment has unique IT and privacy requirements
- New Management team
- “Genki” Energetic
- Solutions must contribute to positive “karma”
- Building from the ground up

IT Revolution

Tenets of the revolution

Education

Design

Partnership

Aozora's Four Conditions for Partnership

- Innovation Leader
- Train *Our* People in *Your* Intellectual Property
- Mutual Non-Disclosure
- Executive Level Sponsorship

Why Apple?

- Undisputed Innovation
- Design Leader in Computing at the Enterprise and Desktop
- Access to the best and brightest minds
- Best hardware/OS integration platform
  - It just works!
- Highly internationalized
- Creative/Energetic
- Access to Senior Executive Sponsors
- Free exchange of information
- Good Education Great Products

Data Center Progress

Data Center Last Week

Data Center Now

Soldiers in the IT Revolution

Challenges

- We are a bank
- Great need for integration
- Needs to be fully functional
- Documentum (information lifecycle management)
- TIBCO
  - Systems integration tool (Business Works)
  - Enterprise app supported on Mac OS X
  - System Management
  - Firm Wide integration Messaging

Tiger Success Factors

- Security Model
  - NetBoot with encrypted Swap on clients
  - Card services and Keychain integration
  - ACLs for finer grained access control
  - Client lockdown based on roles
- Manageability
  - Apple Remote Desktop for teacher/helpdesk
  - Workgroup Manager and Server Admin
- Xgrid for financial modelling

Where Are We?

Rotech Healthcare

Albert Prast
Chief Information Officer and Chief Technology Officer

http://developer.apple.com/wwdc2005/

Rotech Healthcare

- One of the leading providers of home health care products and services
- 479 locations through U.S.
- ~5000 employees

ROTECH
HEALTHCARE INC.
We Care About Patient Care

“Things should be made as simple as possible, but no simpler.”

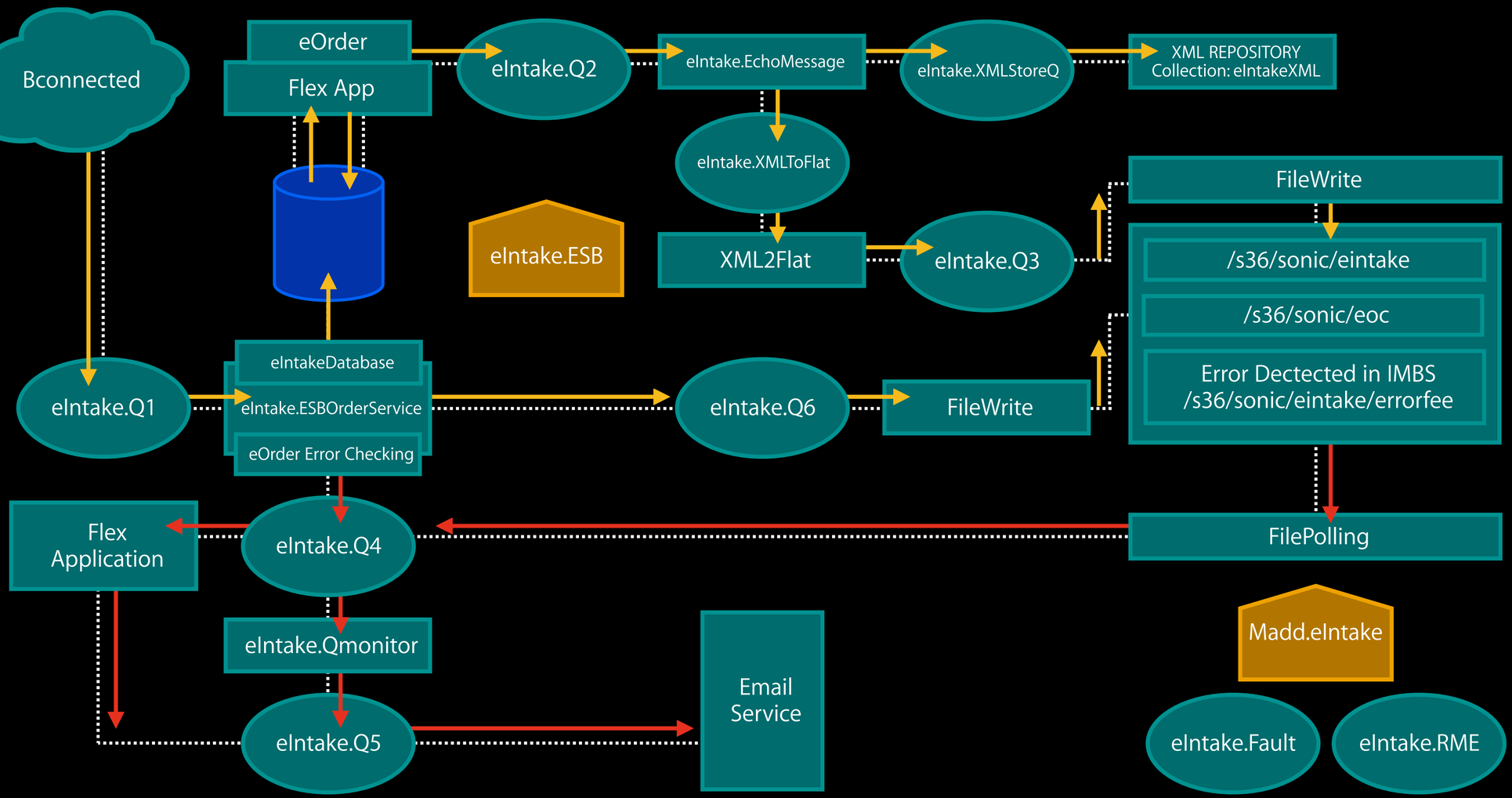
Albert Einstein

Business Challenges

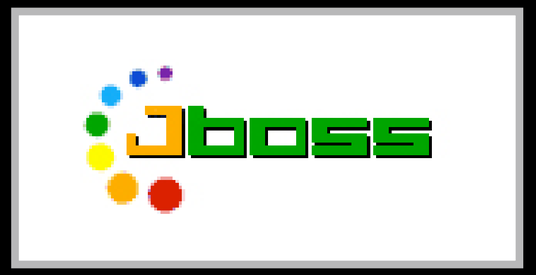
- Burgeoning business intelligence data store
  - Derivative business (e.g. internet, telephony capability)
  - New ways of doing business
  - Segmented business divisions
- Large network >500 nodes
- Many legacy applications
- Requires non-quantifiable scalability
- Must be cost effective
- 100% uptime

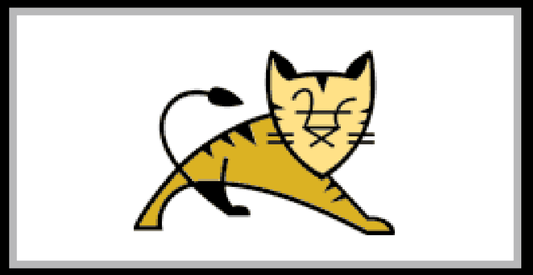
Service Oriented Architecture

- Loose coupling among interacting software agents
- Built upon
  - Small set of ubiquitous interfaces (a.k.a. web services)
  - Descriptive messages constrained by an extensible schema (XML)



Key Technologies





J2EE Application Server

RDBMS

Rotech Solution

- Scalable clustering technology
  - Current cluster can easily and quickly be expanded from 5 to 50 nodes and beyond
  - Powerful performance != High price
  - 64 bit technology today at 32 bit prices
  - n+1 redundancy coupled with application failover = High 9's availability
- Mac OS X Server
  - Reliability (BSD Subsystem and Mach kernel)
  - Best of both worlds: great interface and rock solid stability

Rotech Data Store

- 5TB Xserve RAID for Oracle ASM storage
- More disk for less dollars compared to EMC and IBM
- Allows junior level administrators to manage SAN
- Throughput rivals solutions costing much, much more

Tiger Server

https://developer.apple.com/wwdcsecure/

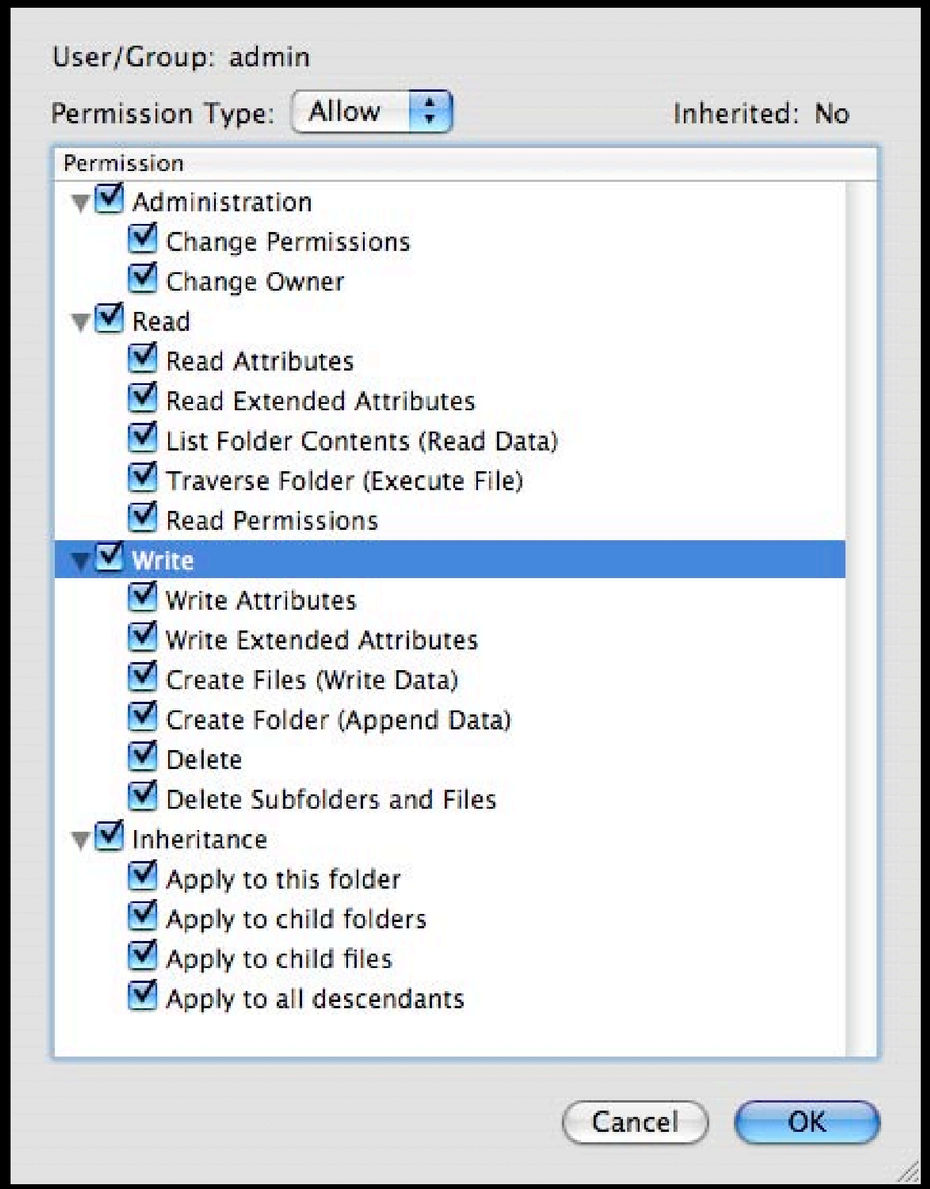
Plumbing

https://developer.apple.com/wwdcsecure/

64-Bit Computing

For high-performance computing

- Memory addressing
- File systems
- Math operations
- Vector image libraries
- Development tools



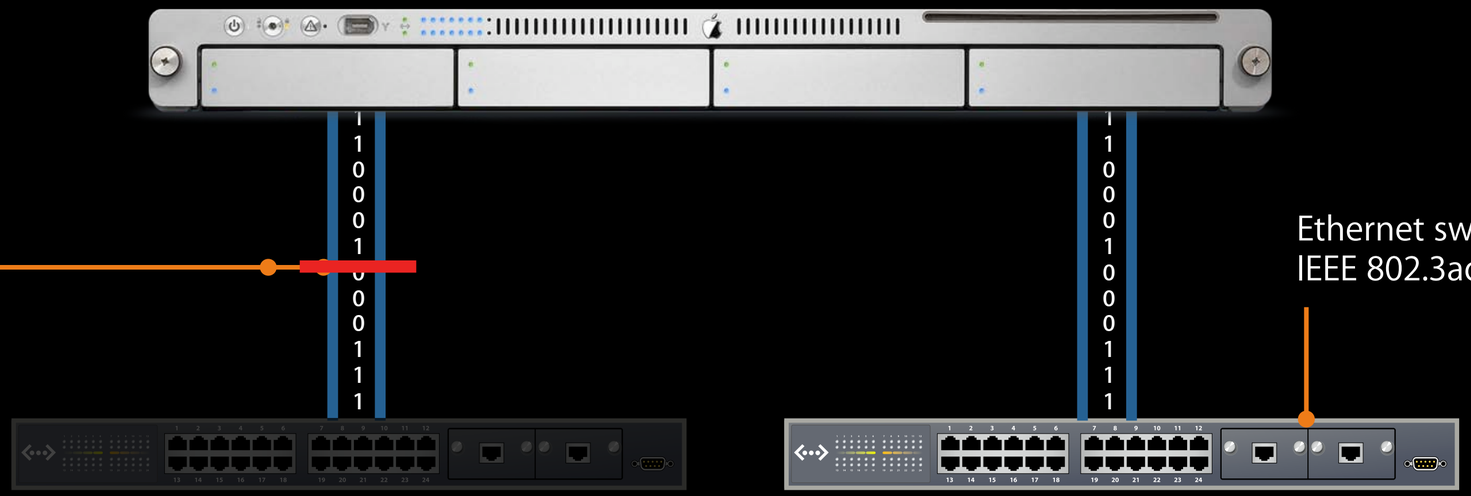
Access Control Lists

File sharing flexibility in mixed-platform workflows

- Supports native file permissions
- Improves integration with Active Directory
- Provides consistent file permissions for Windows XP clients
- Addresses limitations with BSD
  - Inheritance model
  - User membership in more than 32 groups
  - Groups within groups

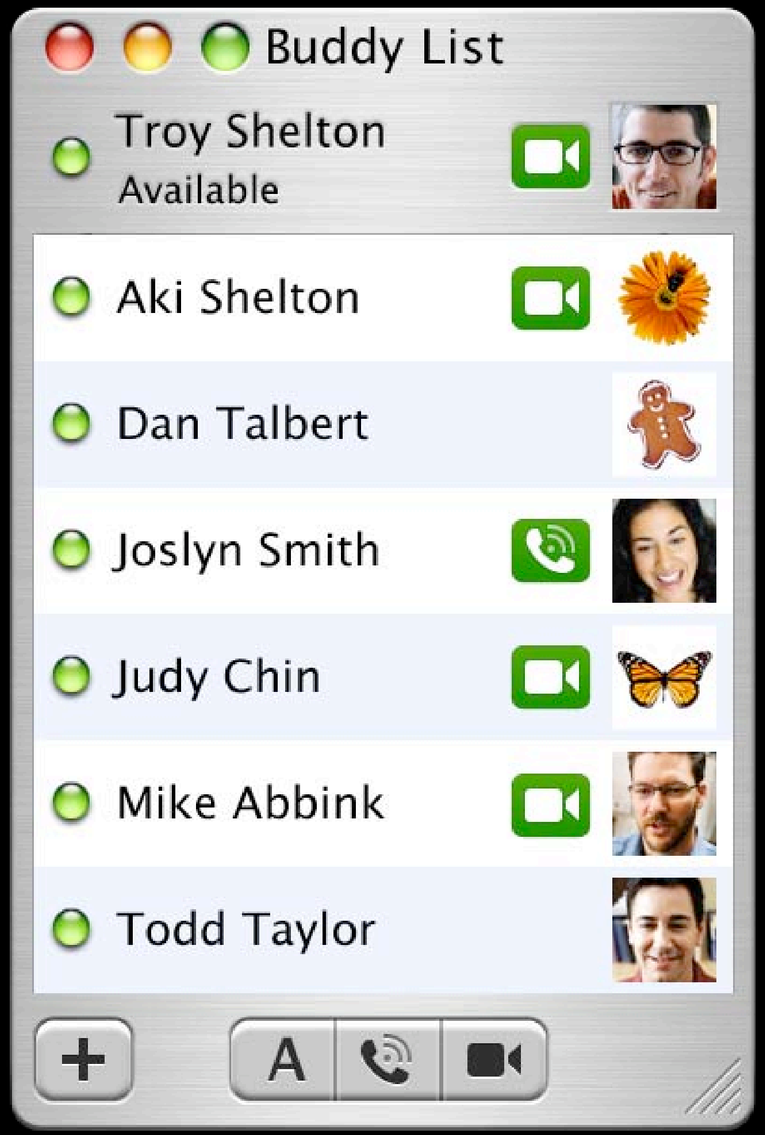
Ethernet Link Aggregation

- Ethernet interface bonding
- Bandwidth aggregation
- Network interface failover
- IEEE 802.3ad compliant



Services

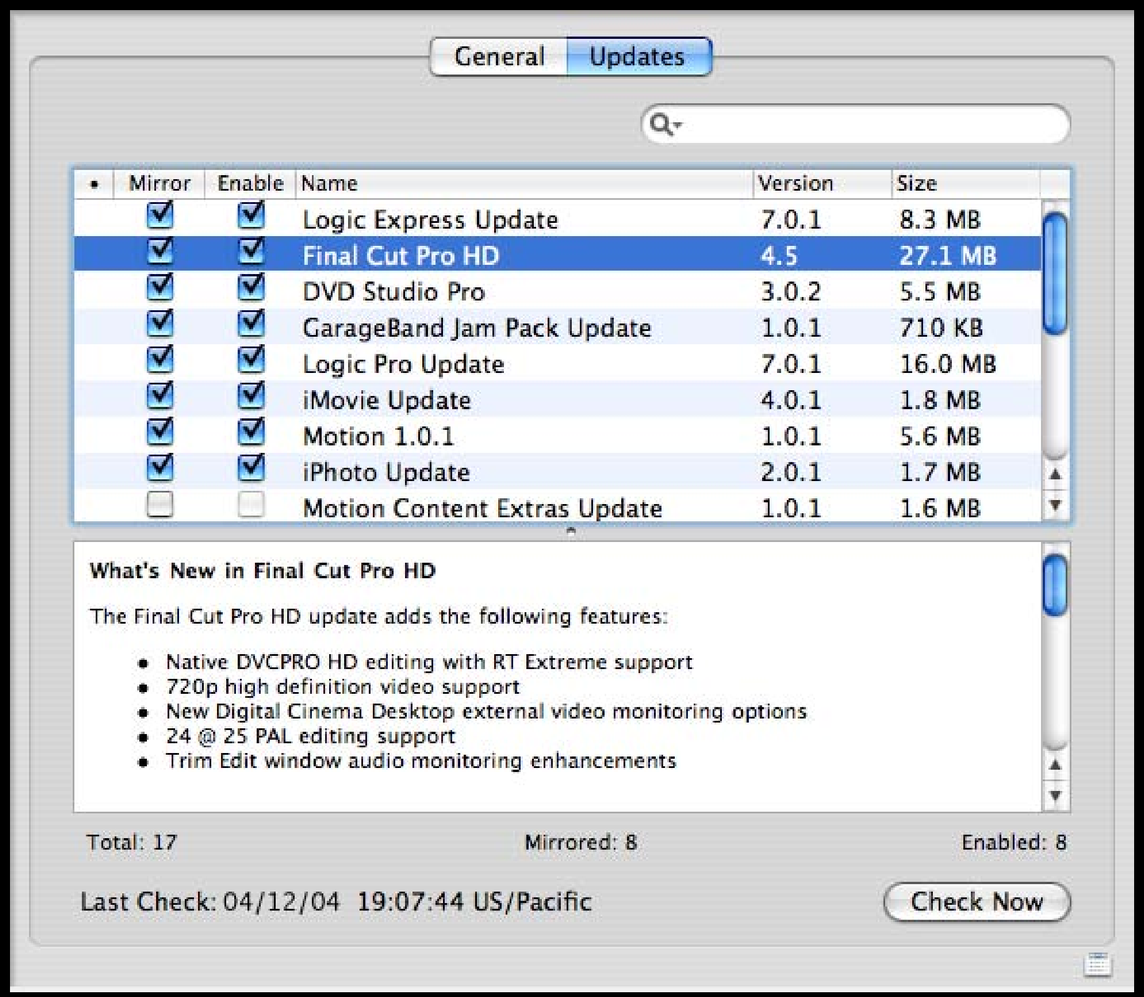
https://developer.apple.com/wwdcsecure/



iChat Server

Secure instant messaging

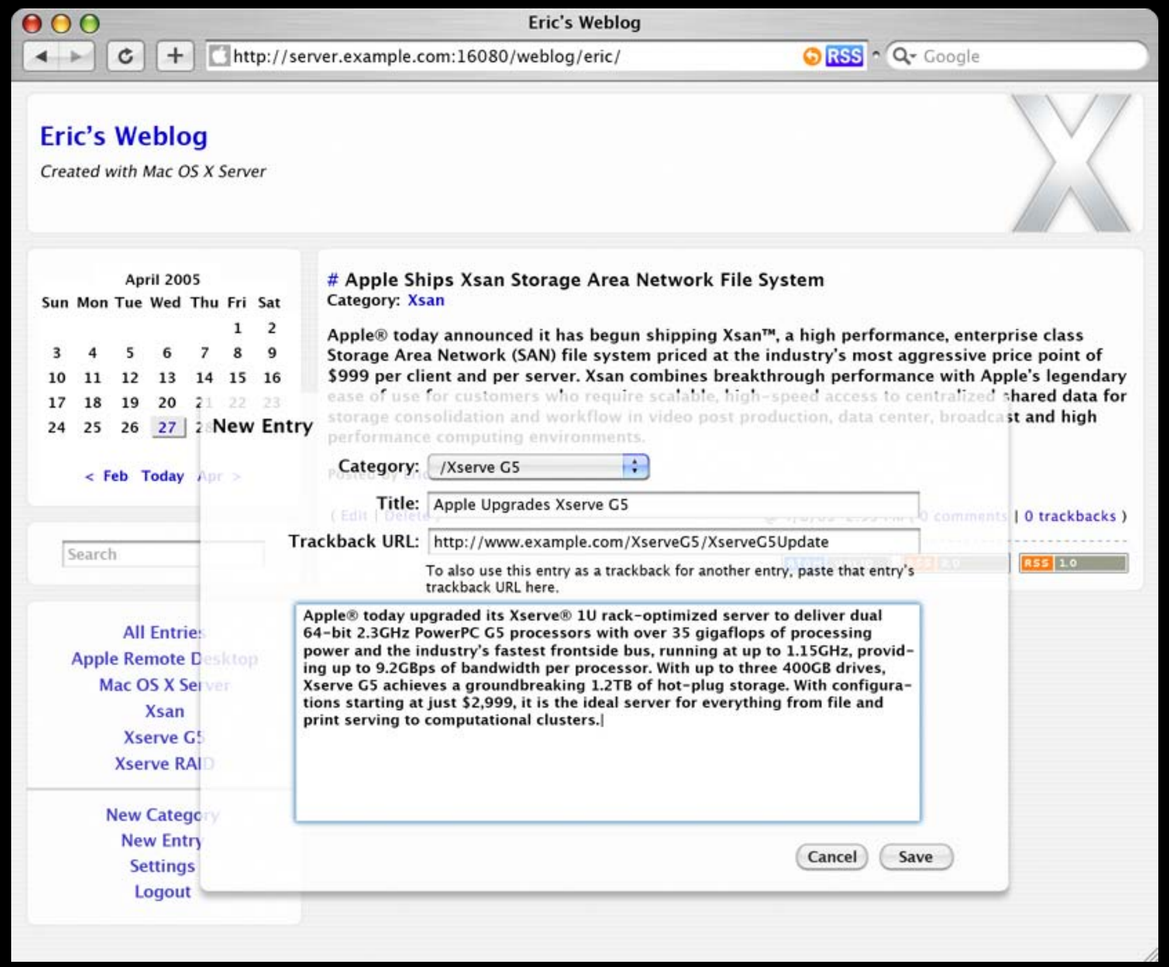
- SSL/TLS encryption
- Works with Jabber clients for Mac OS X, Windows, Linux, and PDAs
- Audio and video conferencing support with iChat AV
- Open Directory integration



Software Update Server

Host your own Apple software updates

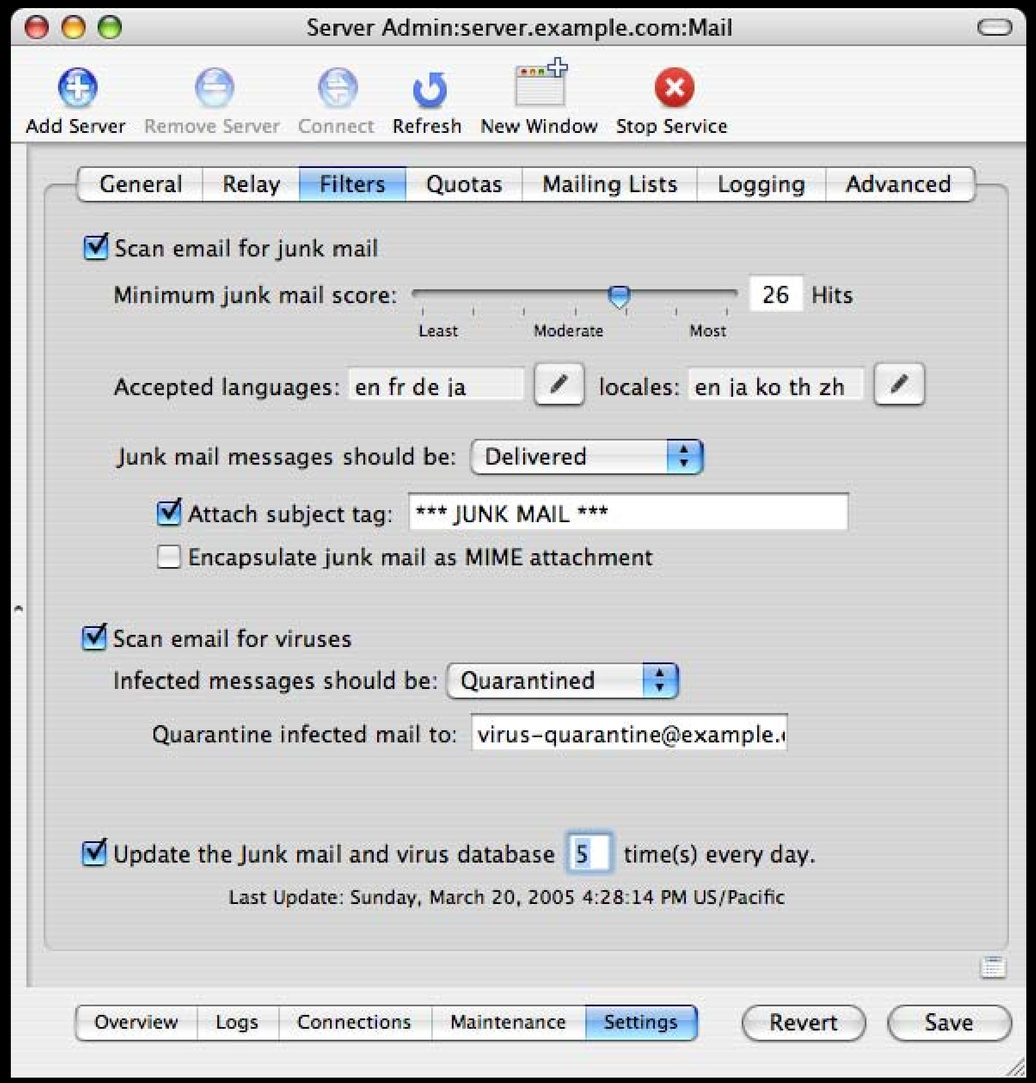
- Management and control of software update availability
  - Check for latest software updates
  - Enable and disable updates for users
- Proxy caching of Apple software updates
  - Conserve network bandwidth
  - Specify updates to cache



Weblog Server

Collaborative content publishing and distribution

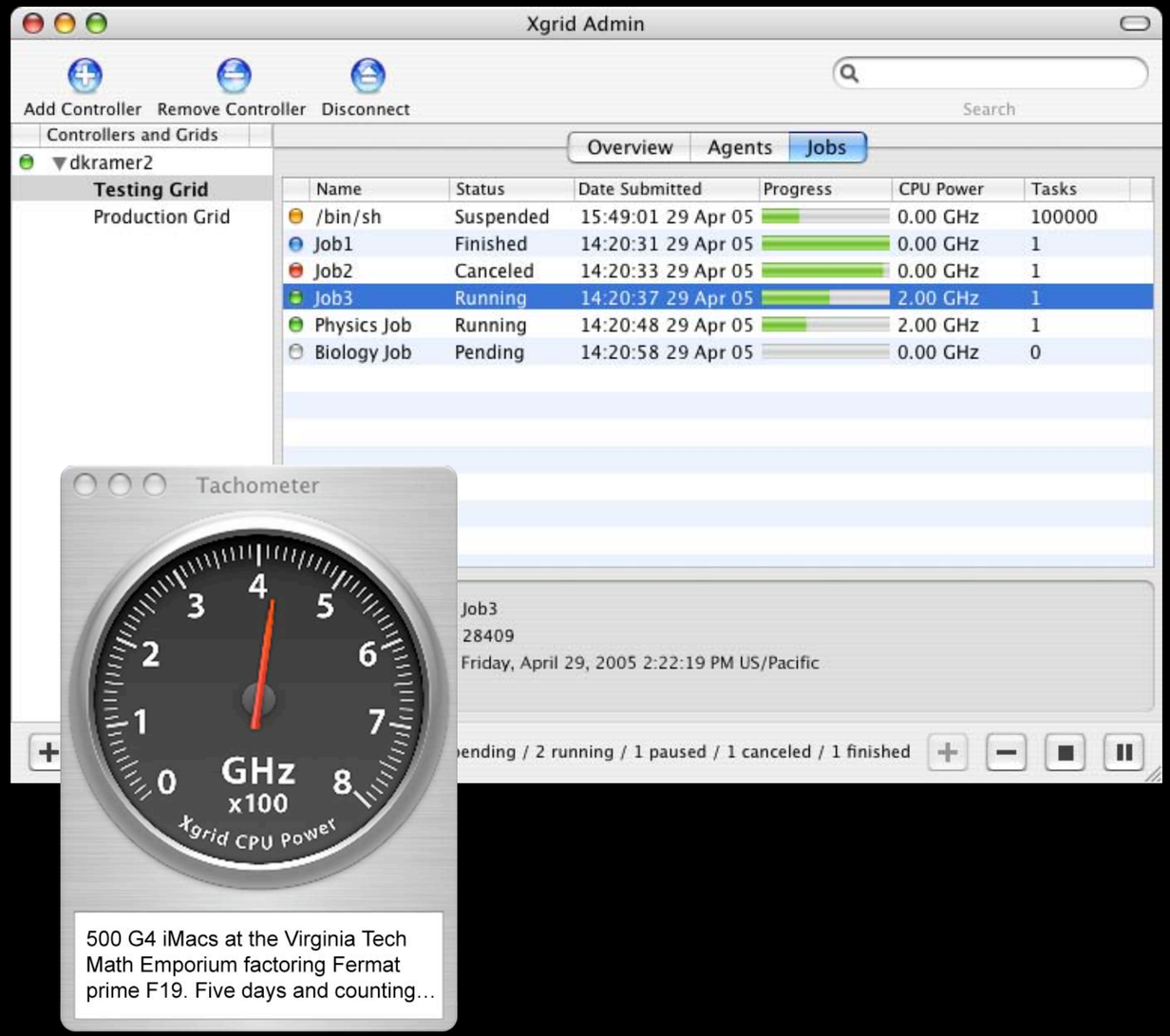
- Content syndication using RSS
- User and group weblogs
- Access controls
- Customizable themes
- Open Directory integration
- Based on Blojsom project



Junk Mail and Virus Filtering

Protect against unwanted mail and viruses

- Junk mail filtering with SpamAssassin
  - Analyzes mail using adaptive filters to classify potential junk mail
  - Refuses unwanted mail based on junk mail blacklists
- Virus protection and quarantine with ClamAV
  - Scans mail messages for viruses
  - Returns, deletes, or quarantines message

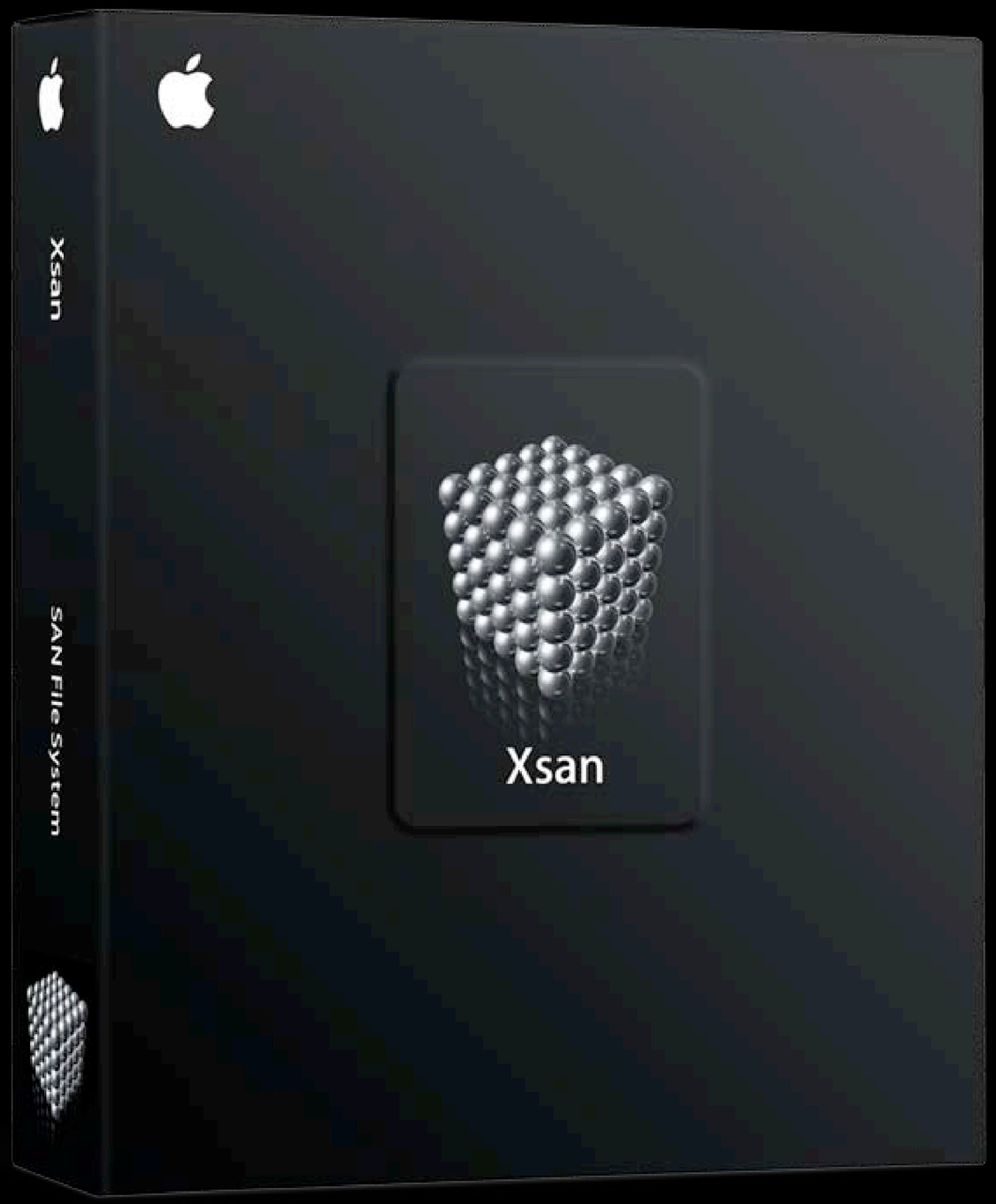


Xgrid

Turn your Mac systems into a low-cost supercomputer

- Integrated client/server architecture
- Intuitive administration tools
- Plug-and-play clustering
- API and frameworks

Xsan
Version 1.1



Xsan on Tiger

Benefits of Xsan version 1.1

- Large scale storage consolidation
  - 64-bit file system
  - Volumes up to 2PB in size
- Virtually no performance or volume scalability limitations
- Consolidate literally hundreds of Xserve RAIDs for increased performance

Free update

WWDC Enterprise IT Track

https://developer.apple.com/wwdcsecure/

Apple Data Center

- Available all week
- Location: 1st Floor Moscone West

Special Event

- Tuesday, June 7, 7pm
- Interactive panel discussion with
  - Apple IT
  - University of Michigan
  - Edith Cowan University
  - Oracle
  - Rotech Healthcare

O'Reilly Brown Bags

- Tuesday, June 7, 12:45—Tim O'Reilly discusses innovation and the Mac
- Wednesday, June 8, 12:45 p.m.
  - Python Today
  - PHP on a Powerbook
  - Perl as a Glue Language
  - MySQL and SQLite: It's in There
- Thursday, June 9, 12:45 p.m.
  - The Ultimate Peripheral
  - What's Hot in Open Source
  - Podcasting for Everyone
  - Advance Scripting

Late Night Labs

- Tuesday, June 7, 7-10pm
- Location: Labs, 2nd Floor Moscone West
- Meet with experts to discuss
  - Mac OS X Server
  - Mac OS X Sever in a heterogenous environment
  - Apple Remote Desktop
  - Xsan
  - Xgrid
  - WebObects
  - Open Directory and Directory Services
  - High Performance Computing

Oracle Database 10g RAC on Mac OS X Server

- Friday, June 10, 10:30am
- Location: Second Level, Alcove 3, across from Enterprise IT Lab

Enterprise IT Presentation Sessions

Java Overview	The Mission Tuesday 9:00AM
Mac OS X Server	SOMA Tuesday 9:00AM
Active Directory Integration	SOMA Tuesday 3:30PM
Managing Clients in the Enterprise	North Beach Wednesday 5:00PM

Enterprise IT Presentation Sessions

Deploying Mac Servers and Clients,Start to Finish	The Mission Thursday 9:00AM
Integrating Mac OS X into a Heterogenous Environment	The Mission Thursday 10:30AM
Configuring and Deploying Oracle 10g on Mac OS X Server	SOMA Friday 9:00AM
Advanced Backup Architectures for Mac OS X	Pacific Heights Friday 3:30PM

Enterprise IT Hands On

A.M.P. on Mac OS X	North Beach Tuesday 9:00AM
Using Oracle JDeveloper with Oracle 10g on Mac OS X	North Beach Tuesday 10:30AM
Develop, Debug, Deploy Java Solutions on Mac OS X Tiger	The Marina Thursday 9:00AM
Network Authentication	Nob Hill Friday 2:00PM

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